

# **Taiwan: From Integrated Missile Defense to RMA?**

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## **Missile Threat**

In July 1995/March 1996, China launched large-scale military exercises in the Taiwan Strait, causing the Taiwan Strait crisis. During the crisis, China fired several short-range ballistic missiles targeted against Taiwan's surrounding waters. In addition China mobilized conventional forces for amphibious attack exercises.

The launch of ballistic missiles during the Taiwan Strait crisis was a shock to Taiwan. The missile launch indicated several defense problems that Taiwan has to face in the future. The first is that this exercise vividly demonstrated China's determination to stop Taiwan's attempt to pursue international status and to oppose any major power developing diplomatic relations with Taiwan.

The second is that Chinese military forces are able to threaten Taiwan's major military assets without physically engaging Taiwanese forces.<sup>1</sup> Traditionally, naval blockade and quarantine by a Chinese submarine force and amphibious attack had been perceived as gravest threat. After the missile test exercise, Taiwan started to realize that the real threat for Taiwan's military security would be missile attack. A likely scenario conceived and agreed upon by Taiwan defense planners, was that China will launch a missile attack in the first of several operations against Taiwan before launching conventional forces to conduct air and naval attacks.<sup>2</sup>

The third is that Taiwan is not able to defend against a missile attack, due to the lack of a viable defense system. In addition, China is improving the accuracy of their missiles. Consequently, Taiwan is likely to lose significant forces, while the Chinese military will likely suffer very low casualties. Even if some weapons platforms are not destroyed by the initial missile attack, Taiwan may not be able to launch an effective counter attack, because major assets, such as command and control facilities, would have been wiped out.

The ramifications of not being able to withstand a missile attack are serious for Taiwan's security. Not only is it likely that Taiwan's major military assets will be destroyed, but, more significantly, it will dissuade allies such as the US, from intervening in the Taiwan Strait.<sup>3</sup> Taiwan's national security is predicated on the assumption that the longer Taiwan can hold out in the face of a Chinese military invasion, the more likely, the US, in one way or another, will intervene to help Taiwan.

The psychological impact is the fourth problem facing Taiwan's defense planners. A missile attack is likely to strike a serious blow to the morale of the general public, which, in turn, may create popular pressure to accept Beijing's term for reunification. Before China chooses that course, uncertainty brought by political stalemate between the two sides of the Taiwan Strait coupled with the insecurity created by China's missiles may erode general confidence toward the Taiwanese government in the long

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<sup>1</sup> *China Times*, January 14, 2001, p. 1. Taiwan defense planners are concerned that Taiwan cannot withhold Beijing's initial waves of attack on major military assets, including command and control systems, airports, ports, and radars. This is particularly the case for missile attack; therefore, there are calls for the hardening of major military assets.

<sup>2</sup> *China Times*, January 9, 2000, in <<http://forums.chinatimes.com.tw/special/taiwanstrait/89109f01.htm>>.

<sup>3</sup> *China Times*, January 14, 2001, p. 1.

term.

Taiwan's apprehension concerning missile attack was reinforced by China's ambitious and comprehensive military modernization. China's effort is vividly depicted in Mark Stokes' well-known monograph, *China's Strategic Modernization*.<sup>4</sup> In the book, Stokes points out that the Chinese military is pursuing a comprehensive strategic modernization with the goal of achieving information dominance by exploiting all types of information technology.

Taiwan's apprehension of China's strategic modernization can be found in former Defense Minister Tang Fei's opening remark at a conference on RMA and defense. In his words, "China will launch six high-resolution satellites next year (2000), and with those satellites, they can watch all of our military actions. They can sit at home and know what we are doing in our backyard."<sup>5</sup>

Tang Fei's other testimony at the Parliament also pointed to this apprehension. He said: "...the Chinese military is also doing all its effort to develop 'asymmetrical warfare' by actively developing precision guided ballistic missiles, cruise missiles, information warfare (IW), and electronic warfare (EW) capabilities. China has emphasized revolution in military affairs in recent years...It is estimated that by the year 2005, with the deployment of recently procured weapon systems, China's naval and air capability will exceed that of Taiwan."<sup>6</sup>

Further, Taiwan defense planners also realized that the nature of a possible war over the Taiwan Strait in the future has changed with the introduction of various types of missiles by China. Former Defense Minister Wu Shi-wen indicated that China is building a capability of "fighting a local war under high tech conditions," and emphasizes a combined warfare of "high intensity" and "fast pace." Meanwhile, China maintains an operational concept that the "initial battle is the decisive battle." It can be predicted that characteristic of defense operations in the future will be "of short warning time and insufficient defense depth." Further, Minister Wu also said that there would be no fixed battle line and no division between the front line and rear line. Further, war between the two sides of the Taiwan Strait will not purely be an issue of the usage of armed force. Rather, it is an issue employing the will and morale of the populace.<sup>7</sup>

Under the shadow of China's missiles and other threats, Taiwan's defense planners set up a task force at the Deputy Chief of General Staff (DCGS) for Operations, the J-3. The task force later made many recommendations, and it seems that these recommendations have been expanded to become the Taiwanese version of the revolution in military affairs.

### **Integrated Air Defense**

The task force, headed by former Assistant DCGS for Operations, MG Fu Wei-ku, was commissioned to study ways to neutralize China's missile threat.<sup>8</sup> The task force, which

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<sup>4</sup> Stokes, *China's Strategic Modernization: Implication for the US* (Carlisle, PA: US Army War College Strategic Studies Institute, September 1999). This book was translated into Chinese soon after publication and is widely distributed in Taiwan's military.

<sup>5</sup> *Xin Xin Wen* [The Journalist] (Taipei), No. 628, March 13, 1999.

<sup>6</sup> Tang Fei, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, March 24, 1999, pp. 5-6.

<sup>7</sup> Wu Shi-wen, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, September 27, 2000, pp. 3-4.

<sup>8</sup> The task force was still headed by Fu Wei-ku after he was promoted to lieutenant general, and became the commandant of the Command and Staff College of the Air Force. After the study had been completed, the task force was later renamed the "Task Force for Integrated Air Defense and Integrated Counter Measures," and was directed by the DCGS for operations. *United Daily News* (Taipei), June 18, 2001, p. 2.

was named “Integrated Air Defense Enhancement Group,” was formed in August 1996 and their recommendation, the “Long Term Plan of Integrated Air Defense,” was approved by former Chief of the General Staff, Gen Tang Yao-ming, in April/May 1999.<sup>9</sup>

There are several elements in the “long-term plan.”<sup>10</sup> With regard to missile threat, the task force realizes that technology will not be ripe any time in the near future to intercept missiles in their boosting phase, and Taiwan does not have capability to destroy missiles at their launch site. Therefore, their plan proposes both active [ji ji fang yu] and passive defense [xiao ji fang yu]. The active component involves the use of a missile defense system to undertake the mission of interception in atmosphere, while the passive component involves the hardening of major military assets and the use of shelters to lower the damage caused by a missile attack.

As for the types of the missile defense systems, lower-tier systems of both naval and ground types are considered. The ad hoc group proposes to procure the Aegis combat system and the Patriot system, along with the indigenously developed, anti-tactical ballistic missile air defense system, the Sky Bow [tien gong] to protect major political and military assets.

The recommendations do not rule out the option of developing “defensive counter systems” [fang wei xing fan zhi wu qi]. It is said that the project range of the defensive counter system will be long enough to cross the Taiwan Strait.

Economy is a major factor behind the option of developing the “defensive counter system.” Taiwan’s defense planners think that the cost ratio between offensive and defensive missile is roughly between 1:9 and 1:18, and it is too costly to develop a missile defense system in the wake of a weakening economy and declining defense budgets. Meanwhile, due to rapid economic development, China’s southeast region should be an inviting target, and if China decided to develop their own “defensive counter system,” it might face a dilemma diverting its resources into a defensive system.<sup>11</sup>

The second element involves early warning systems and reconnaissance capability. The group proposes to procure long-range radar to have more time for early warning and response. There is no doubt that the radar can also play the role of cueing missile trajectory information to combat radar.

The group has also considered the need for satellites to conduct reconnaissance and surveillance functions.<sup>12</sup> However, they expect that the US will not provide any assistance for the needed satellite in the near future, and Taiwan has to maintain flexibility for the procurement of the satellite, through either indigenous development or cooperation with other countries.

The third element involves the buildup of an integrated command and control system among the three services. On the one hand, the purpose of this element aims at integrating air defense units of all three services into one efficient system. This element also attempts to build a Taiwanese version (or low-end version) of C4ISR to buttress the integrated air defense system.

Actually, the second and third elements, along with other measures, form the core of Taiwan’s version of IW. This reflects the fact that Taiwan’s defense planners have

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<sup>9</sup> *China Times* (Taipei), September 21, 1999, p. 4.

<sup>10</sup> Unless otherwise cited, the following information is drawn from *China Times*, September 21, 1999, p. 4.

<sup>11</sup> *United Daily News*, June 19, 2001, p. 4.

<sup>12</sup> As early as May 1996, Taiwan defense planners have thought of the necessity of developing satellite early warning and reconnaissance capabilities, along with long-range radar. *China Times*, May 18, 1996, p. 1.

realized that IW occupies the highest strategic position for overall security in the Taiwan Strait. They conceive of IW containing EW, which, in turn, can affect operations in the air, sea, and land in sequence.

It seems that this plan is being implemented now. For the missile defense system, Taiwan has made a procurement request for Aegis combat system equipped destroyers to the US in the fall of 2000, along with the PAC-2 plus system which has already been delivered. This is to be supplemented with the indigenously developed Sky Bow I and Sky Bow II missiles. However, the request for the Aegis was postponed by the US in April 2001, when the newly elected Bush administration announced the latest arms sale items to Taiwan.

The item entitled “defensive counter system” is reportedly being aggressively developed. It was reported that Taiwan is developing two types of missiles. The first one is a ballistic missile with mid-range capability.<sup>13</sup> The program, which is code-named Di jing, aims at developing a ballistic missile with a range between 1,000 and 2,000 kilometers. It is expected to be completed before 2005, a year judged by many experts, particularly the US Department of Defense, as a critical year that Taiwan may lose superiority over China in military capabilities.<sup>14</sup>

The ballistic missile program faces some challenges. The biggest one is how to increase accuracy, reduce deployment time, and maximize response capability without using a weapon of mass destruction warhead. Some sub-systems have reportedly been tested, but it is too early to conduct the whole range of flight tests.

Another program being implemented is the land attack cruise missile. The cruise program, which is code-named “Hsiung Feng 2E,” will develop a sub-sonic cruise missile with a range of 1,000 kilometers. This will enable it to hit military targets in China’s Nanjing, Jinan and Guangzhou Military Regions, depending on where the platform is deployed. Media reports indicate that the design of the cruise missile is based on the US made Tomahawk cruise missile.<sup>15</sup>

As for early warning items, two systems are being pursued. The first one is a reconnaissance satellite. Cooperating with Israel, Taiwan can use the Israeli EROS (Earth Resource Observation Satellite) to obtain real-time black/white photographs with a resolution of two meters. The EROS-1, which is reported to be able to detect Chinese military systems including the M-9/M-11 ballistic missile, has been in orbit since December 2000. In addition, the present contract allows Taiwan to have full control of photo-taking as the EROS satellite enters the Taiwanese satellite receiving station-centered radius of 1,000 kilometers.<sup>16</sup>

Currently, Taiwan attempts to obtain information from a pool of reconnaissance satellites. In addition to EROS-1 and the following EROS series of satellites, Taiwan also buys images from a US commercial satellite, the IKONOS (with a resolution of one meter), the French Spot satellite, and the Taiwan-assembled Hua Wei-2 (with a resolution of two meters). It is expected that by 2005, Taiwan should be able to obtain sufficient information from those satellites.

For long-range radar, the US has agreed to sell the powerful phase array “pave paw” radar in the spring of 1999. It is said that Raytheon will sell two sets of AN/FPS-115

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<sup>13</sup> *United Daily News*, June 18, 2001, p. 2. There are strong voices in Taiwan, advocating the development of ballistic missile as retaliatory weapons. It is estimated that in ten years Taiwan will be able to develop a missile with a range of 2,500 kilometers. *China Times*, January 9, 2000, in <<http://forums.chinatimes.com.tw/special/taiwanstrait/89109f01.htm>>.

<sup>14</sup> US Department of Defense, *The Security Situation in the Taiwan Strait*, in <<http://www.chinatimes.com.tw/report/tmd/news/report1.htm>>, August 2, 1999.

<sup>15</sup> *United Daily News*, June 26, 2001, pp.1&3.

<sup>16</sup> The satellite information is from *United Daily News*, August 12, 2001, p. 1.

radar to Taiwan, and with this radar, warning time will increase by six minutes, and Taiwan will be able to detect a target several thousand miles away. In addition, all Taiwan's air defense systems will be integrated with this radar.<sup>17</sup>

Efforts are underway for the establishment of an integrated command and control system. The program, which is code-named "Bo Sheng" [Fight to Win], aims at establishing a data link to integrate the command and control systems of the three services, including their various air defense systems. Currently, the navy and air force have their own air defense systems, code-named "Da Cheng" [Great Success] and "Qiang Wang" [Strong Net] respectively, which are operated independently of one another. The integration will also be extended to the newly developed UAV (unmanned aerial vehicle) system and underwater surveillance system.<sup>18</sup>

A new communication system for the army has been set up as well. Media reports indicate that the army has procured the first IMSE (Improved Mobile Subscriber Equipment) system from the US in August 1998 to build up army-wide tactical communications. It is expected that two more units would be procured to establish an island-wide communication system for the army.<sup>19</sup>

Further, under the Bo Sheng program, an EW system at battalion level has been organized within the army. This unit has reportedly participated in military exercises launching EW against, and destroying the air defense radar of, the "red team." The army will upgrade its four "communication units" to "communication and information units" with the capability to conduct a full range of EW missions. Also, the navy and air force have their own EW units.<sup>20</sup>

### **Developing IW Capability**

Since 1998, developing IW capability has become the priority in Taiwan's military. In addition to the above stated efforts, which include the buildup of the C4ISR and early warning capability, other measures have also been taken to develop IW capability by Taiwan's defense planners.<sup>21</sup> Organizationally, atop a group of related units involved in IW development, a "Guiding Committee for the IW Strategy Development" was formed to direct the overall IW effort. Below this guiding committee, a special agency to handle the overall development of the IW for Taiwan's military was designated; the Communication Electronic and Information Bureau (CEIB) has the full responsibility for this job. In fact, the CEIB has a wide range of influence with regards to the buildup of Taiwan's IW capability.

A second measure is to set up an "IW lab." The lab is charged with the responsibility of research and planning for the advanced technology of IW. The Chung Shan Institute for Science and Technology reportedly plays the role of the lab.<sup>22</sup> A third measure is the formation of a "Central Emergency Response Team" with the goal of handling various emergent matters through cyber monitoring and rapid response.

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<sup>17</sup> "Taiwan will procure new radar system," in <<http://www.future-china.org.tw/csipf/press/digest/dgst891120.html>>.

<sup>18</sup> Unless otherwise cited, the Bo Sheng information is drawn from *China Times*, June 10, 2001. It is reported that the Bo Sheng contains sub-programs to cover different missions, including an EW system for the army, data link for the three services, and communication equipment for the army. This author wants to thank Der-yeun Lu of *United Daily News* for providing this source.

<sup>19</sup> *Central Daily News*, January 23, 2000, p. 4, and *Taipei Times*, December 26, 2000, in <<http://www.taipeitimes.com/news/2000/12/26/story/0000067028>>.

<sup>20</sup> *China Times*, June 10, 2001.

<sup>21</sup> Unless otherwise cited, all related information is drawn from Tang Fei, Defense Report to the Committee of National Defense, the Legislative Yuan, November 1, 1999, pp. 8-9.

<sup>22</sup> Media have report that the Chung Shan Institute has a "Net Security," or the CSII (Chung Shan Information Infrastructure) program, designing a protection system for the intranet systems of the three services. *The Journalist*, No. 628 (March 18, 1999). This report can demonstrate that the Chung Shan Institute plays an important role in IW capability development.

A fourth is the formation of the “Communication and Information Command,” or, the so-called “IW troop.” This unit, reportedly directly subordinate to the Chief of General Staff, has the mission of undertaking research on IW offensive and defensive tactics, the monitoring of internet and intranet, and launching “defensive counter action” during wartime to facilitate obtaining air superiority, sea denial and anti-landing warfare.<sup>23</sup> It is reported that this unit, established on January 1, 2001, is also called the “Tiger Team,” and has already participated in the annual large-scale military exercise.<sup>24</sup>

A fifth is the formation of a coordination mechanism. The coordination mechanism, called the “joint working group,” is composed of members from the MND, National Security Council, Ministry of Finance, and intelligence units. The group is commissioned to study the impact of IW patterns. There is also an unnamed unit responsible for the command and control of collecting, analyzing, and disseminating information and intelligence as well as coordinating operations by services and arms.<sup>25</sup>

A development plan for the IW capability has also been made. Former Defense Minister Tang Fei pointed out at the Parliament that in the near term, priority is being placed on the strengthening of protection mechanisms of information systems. The mid-term goal is, through system integration, to build the software and hardware capabilities of EW, improve the technology of frequency management, strengthen electronic detection. The long-term goal is to continuously improve research and development of technology and tactics so that a digitized force can be formed and an IW capability with both offensive and defensive functions can be established.<sup>26</sup>

In fact, the development of IW capabilities has been prioritized by Taiwan’s defense planners for the future. This trend can be reflected in the year 2001 defense budget. “...A defense official said that the focus of the military construction in the next one and two years will be placed on the integration of C4ISR, data link, EW, IW, early warning, protection measures against the EMP bomb, and defensive counter systems. Of the NT\$47.3 billion of capital investment, those systems will take the lion’s share.”<sup>27</sup>

Former Defense Minister Wu Shi-wen echoed the above focus. In his testimony made to the Parliament, he said that priorities for capital investment for the fiscal year of 2002 (from January 1 through December 31, 2002) would be those which are already being procured, the C4ISR system, the “defensive counter systems,” as well as those sub-systems/components which are in severe shortage.<sup>28</sup>

There are several reasons for the prioritized development of IW capability. The first has to do with imminent threat perception from China’s rapid development of IW capabilities. Former Defense Minister Chiang Chung-ling indicated this threat in his statement made to the Parliament. He said that Chinese military forces from the General Staff Department down to the Military Region, Group Army, and major surface combatants all have deployed electronic reconnaissance and jamming capabilities; its air force already has more than ten EW aircraft able to conduct jamming and

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<sup>23</sup> The information on the IW troop is drawn from Wu Shi-wen, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, March 5, 2000, p. 9.

<sup>24</sup> It is reported that beginning in 1998, Taiwan began to organize the IW troop, and priority for procurement was shifted to software rather than hardware. See *Global Times* (Beijing), March 23, 2001, from <[http://gptaiwan.org.tw/~cylin/china/2001\\_3\\_23.htm](http://gptaiwan.org.tw/~cylin/china/2001_3_23.htm)>.

<sup>25</sup> *Global Times*, March 23, 2001, from <[http://gptaiwan.org.tw/~cylin/china/2001\\_3\\_23.htm](http://gptaiwan.org.tw/~cylin/china/2001_3_23.htm)>.

<sup>26</sup> Tang Fei, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, November 1, 1999, p. 10.

<sup>27</sup> There were different reports for this figure. However, they all pointed to the trend of developing IW capability as the priority. See *United Daily News*, September 3, 2001, in <<http://be1.udnnews.com/2001/9/3/newsfocusnews/focus/445428.shtml>>, and *China Times*, September 6, 2000, p. 4.

<sup>28</sup> Wu Shi-wen, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, October 3, 2001, p. 19.

intelligence gathering functions.<sup>29</sup>

Former Defense Minister Tang Fei also explicitly pointed out this threat. He said: "...After the Gulf War, China, by emulating the US experience in the war, has endorsed asymmetrical warfare, in which IW warfare is employed to destroy, manipulate, and disrupt our operational mechanisms and central command system with a goal of ruining our defensive security. At present, China...conducts the research of software; sets up IW war game center; forms a high-tech special force to conduct a variety of IW warfare in the Guangzhou Military Region. Further, China has made preliminary steps towards the development of the EMP bomb."<sup>30</sup>

Tang Fei also pointed out the strength of China's IW capability. He said: "China's strength of IW capability lies on satellite communication and reconnaissance technology; electronic, microwave, and laser technology; as well as a tactical EMP (without radiation pollution). It is estimated that around 2005, China's IW capability will constitute a substantial threat for Taiwan."<sup>31</sup>

The second reason is related to comparative advantages that Taiwan has. Taiwan is perceived as a leading country in the field of information technology, and with this edge, Taiwan is confident in its ability to develop IW capabilities. Again, Tang Fei's statement reflected this confidence. "We already have an institutionalized information education system; good basis has been laid on information construction; our private sector already has done well in the field of anti-virus software and internet protection products."<sup>32</sup>

Perceived low cost is the third reason for prioritizing IW capabilities. In the wake of declining defense budgets and a weakening economy, Taiwan has to balance defense needs against economic development. Taiwan has to develop its own methods of asymmetric warfare to accomplish the goal of fighting a giant Goliath (China), given its status as a small country. IW is perceived as a low cost tool able to help Taiwan accomplish the goal. Again, former Defense Minister Tang Fei's speech to the general public indicated this conception. His speech emphasized that to accomplish its objective of countering a larger opponent and, at the same time, saving resources, it is necessary to make the development of EW capability the top priority.<sup>33</sup> All these points demonstrate that Taiwan has realized a strong need for developing IW capability.

## **Operation Strategy and IW Development**

It seems that there is no integration among the IW development, the air defense program, and the overall military strategy in Taiwan. This may not be the case for China.

Judging from IW-related publications authored by Chinese military-strategy analysts, any means can be used to destroy an adversary's information systems. Under this definition, all means can be classified into two types. They are "soft kill" (such as computer virus to ruin adversary's data system and EW to jam the adversary's radar and communication systems), and "hard kill" (such as those ballistic/cruise missiles deployed across the Taiwan Strait, which are able to wipe out Taiwan's military assets). The EMP bomb can also be classified as "hard kill" tool.

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<sup>29</sup> *Unite Daily News*, May 16, 1998, p. 13.

<sup>30</sup> Tang Fei, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, November 1, 1999, p. 7.

<sup>31</sup> Tang Fei, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, November 1, 1999, p. 9.

<sup>32</sup> Tang Fei, Defense Report by the Ministry of National Defense to the Committee of National Defense, the Legislative Yuan, November 1, 1999, p. 9.

<sup>33</sup> *Liberty Times*, July 25, 1999, p. 2.

This definition may reflect the fact that China has invested in strategic thinking with regards to IW capability development. China may attempt to build a link between means and operations in the context of IW. This is strategy-oriented development of IW capability, which matches the Chinese military's proverb that military theory should take the lead over weapon development.

However, it seems that Taiwan has a narrower definition of information warfare than that of the Chinese military. "Hard kill" is not included in Taiwan's definition of information warfare. In a statement, the CEIB of the Ministry of National Defense lays out the core of their work, which may reflect Taiwan's conception of IW:

“...For this ministry, the focal points for building IW capability are as follows: the first is to integrate the communications network...; the second is to strengthen EW capability...; the third is to establish dominant IW capability...; the fourth is to implement management of frequency...; the fifth is to build a data link for joint operations...; the sixth is the security of communication and information...”<sup>34</sup>

The reason for not including “hard kill” capability in the overall IW development plan may have to do with poor a coordination mechanism between end users, the three services, and the supplier.<sup>35</sup> First, the guiding committee is a loosely organized unit. Though the committee members include representatives from all three services, those service representatives, constrained by daily routine operations, do not have time to research the present needs of their constituent branches, let alone have these needs incorporated into the development plan. Neither, is there a specialized agency within the three services to perform these tasks.

As a consequence, the overall development plan might be mapped out by the CEIB alone. The problem is that the CEIB is an agency completely composed of technical staff, which does not have experience in comprehensive defense planning and military operation. They do not know the needs of the three services, while the service branches are all occupied by daily routine operation. A discrepancy between the end user, the three services, and supplier, the CEIB, might thus occur.<sup>36</sup>

In other words, the organizational coordination mechanism for IW development is technology-oriented. It is likely that the CEIB made their proposals regarding the IW capability development plan without addressing the larger question of how the IW should be integrated with overall operations plan and military strategy.

To some extent, this may also reflect a dilemma that the “defensive counter system” has to face. Constrained by isolated diplomatic status, it is rather provocative for Taiwan to launch a preemptive tactical strike in any conflict in the Taiwan Strait. Consequently, those “defensive counter systems” cannot be included in the IW category, and can only be used for a second strike.

### **Organizational Restructuring**

However, the lack of efficacious coordination for developing IW capability may also reflect a larger problem. This problem consists of an inordinate emphasis on the development of a hardware system without considering how organization and doctrine should make concomitant change. In the end, IW-related technology, organization, and doctrine are developed independently and without integration.

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<sup>34</sup> Ministry of National Defense, Information on IW, in <<http://www.youth.com.tw/member/other4-01.htm>>

<sup>35</sup> Personal interview with defense officials, January 9th and 15th, 2002.

<sup>36</sup> Ibid.



Taiwan's military system did attempt an organizational restructure beginning mid-1990s. This consisted of a transformation of civil-military relations, the streamlining of high command, and the consolidation of force structure.<sup>37</sup> It was, however, unrelated to RMA. The reorganization was not made proactively to match changing military technology; rather it was a reaction to unfavorable circumstances.

Several factors can be attributed to the streamlining of the high command. The first is strained financial resources. The increasing cost of social welfare programs, as a result of democratization and the need for infrastructure investment, has forced a reduction in the defense budget. Consequently, the defense budget, measured as a percentage of the gross domestic product (GDP), has declined from 4.22 percent in fiscal year (FY) 1994 to 3.26 percent in FY1998, and the defense budget as a part of total government budget declined from 24.28 percent in FY1994 to 22.43 percent in FY1998.

Huge personnel costs, in relation to operational cost and capital investment, also contributed to the reduction of force structure. In the FY1999 budget proposal submitted to the Parliament, the three sections in the defense budget are 50.05 percent for personnel cost, 19.09 percent for operational cost, and 30.86 percent for capital investment. Given that personnel costs take up half of the total defense budget, it was no accident that without a streamlining of military personnel, Taiwan's military will not be able to pay its electricity bill by 2006, quipped former Chief of the General Staff Tang Fei.

The third factor is the decline in available draftees. Taiwan maintains a primarily conscript military force. However, the Taiwan military has also encountered manpower problems at the basic level in the past decade. Few younger people of talent were interested in serving in the military when they could be better off, at least financially, by working in the private sector. Also, as Taiwan proceeded toward democratization, the military's authoritarian culture seemed less attractive to the younger generation. Nevertheless, the trend has reversed itself in the last two years, largely due to Taiwan's anemic economy.

Declining population growth has also forced defense planners to scale back Taiwan's force structure. The 1998 Defense Report predicts that the numbers of eligible recruits will continue to decrease in the next five years from about 161,000 in 1998 to 148,000 in 2002. Lower birth rates as a result of increasing living pressure and declining economic performance, as well as the outflow of population due to increased crime rate and education opportunities abroad have contributed to the decline of available draftees.

The fourth factor is a response to China's rapid military modernization program. Taiwan has sensed that since the Gulf War, China is rapidly modernizing its military force from every aspect. The spectrum ranges from procuring new systems and technology from Russia, to reforming education and training institutions, from issuing new doctrine and guidelines, to increasing the frequency and intensity of military exercises, from undertaking further cut backs, to putting emphasis on developing IW capability. China's military modernization is done under the slogan of fighting a "local war under high-tech conditions".

Taiwan's military re-organization of the mid-1990s is called the Jing Shi program. The program includes two parts, which consist of streamlining of the command level and consolidation of the field levels. It was hoped that upon the completion of the Jing Shi

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<sup>37</sup> This section is heavily drawn from Arthur S. Ding and Alexander C. Huang, "Taiwan's Military in the 21<sup>st</sup> Century: Redefinition and Reorganization," in Larry Wortzel (ed) *The Chinese Armed Forces in the 21<sup>st</sup> Century* (Carlisle, PA: US Army War College Strategic Studies Institute, December 1999), pp. 253-283. It should be noted that for the purpose of this article, only that portion of the streamlining and consolidation are cited.

program, total manpower would be reduced, while firepower, mobility, and mobilization capability would be increased. Of the streamlining, 25 departments under the five DCGS were reduced to 16 in number at the General Staff. At the General Political Warfare Department, five departments were reduced into four with some functions being eliminated. Reform was also done at various military schools, ranging from the merging of several arms training schools into one at each service, to the formation of National Defense University by merging several military colleges. Changes also were done in each of the services and at the Tri-Service Joint Logistic General Headquarters.

However, some new important agencies were set up in the Jing Shi Program in the context of streamlining as well. A typical one was the establishment of the Education, Training, and Doctrine Development Command in each of the three services. Also, the CEIB was established after two agencies were merged.

Of the consolidation, the biggest structural change was made in the army. The army gradually replaced its division-level strategic units with combined arms brigades. This change was related to Taiwan's geographical circumstance, which, with unique terrain, is not favorable to large-scale maneuver operations, and is within easy range of Chinese military's power projection.

Five types of combined arms brigades were organized. They were the armored infantry brigade, the airborne cavalry brigade, the motorized infantry brigade, the special operations brigade, and the tank brigade. The five combined arms brigades will become a striking force with their strong mobility and firepower. The experimental formation for the five types of brigades started in 1997, and was completed by the year 2000.

Many questions were not addressed in the streamlining and consolidation described above. For instance, there was no real sense of organizational re-engineering as proposed by RMA advocates. The end result was nothing but establishing a percentage goal for across-the-board cuts without considering the change of military strategy and the re-arrangement of functions of various units.

On the other hand, the decision of building five types of combined arms brigade was also problematic. No discussion or debate was attempted over how the consolidation of the army force structure should be made,<sup>38</sup> and how many combined arms brigade are needed. In addition, no experimental formations for each of the five types of combined arms brigade were considered before the formal decision was made.<sup>39</sup> As a consequence, formation of the brigades, doctrine, and tactics were not in place when the decision was made. The concept of joint operations among the three services was similarly neglected.

### **Characteristics of Taiwan's Military Modernization**

RMA is a forward-looking strategy. Currently, it indicates that based on the potential military application of some new information technology in the next 10-20 years and a new mode of warfare/operations is envisioned, a military system is accordingly transformed in its organization and operational doctrine. It is a strategy that combines potential technology/weapon systems, organization and operational doctrine, which the military takes initiative to adopt. To some extent, it is a continuous process, implying a continuous challenge to itself.

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<sup>38</sup> It has to be pointed out that consensus on reducing the size of the strategic unit for the army from the division level had been reached, but no consensus on the replacement was made.

<sup>39</sup> Because of a lack of an experimental formation of the combined arms brigade before the decision was made, the unit type has met problems. The streamlining program abolished the coordination officials from navy and air force at the division level, making joint warfare impossible for the combined arms brigade; combat support units are dispersed, reducing firepower capability.

If the above RMA definition can be accepted, what Taiwan has done in the past several years cannot be interpreted as RMA. First, what Taiwan has done was a reaction to unfavorable circumstances, including declining defense budgets, a weakening economy, decreasing numbers of draftees, and a rising Chinese military threat as stated above. It was not a proactive or visionary strategy.

Secondly, the RMA concept was initially only reluctantly accepted by the military. Despite several years of intense debates and discussion over the concept by major powers, Taiwan's military leaders seem reluctant to actively engage in related studies until the civilian sector engaged in the discussion.<sup>40</sup> Some officials even discount the concept entirely. Though an ad hoc group was formed at the National Defense University to study RMA, their study has not received unanimous support from the defense planners, and their study did not have any impact.<sup>41</sup> Thirdly, there is no systematic consideration among technology, re-organization, and doctrinal change at the joint level. As stated, these evolved independently of each other.

Fourthly, the US factor plays a very important role. Since the 1996 Taiwan Strait crisis, the US has increased security engagements with Taiwan. These include high-level security dialogue; the decision to deliver long-range radar; assistance in providing C4ISR systems to integrate the three services; and assistance on the assessment of the military capability of the three services along with extensive dialogue with Taiwanese military officials at a workshop run by the Center for Strategic and International Studies.<sup>42</sup> Of these engagements, the assistance on the assessment of military capability of the three services is probably the most important. It helps Taiwan's military to identify weaknesses and problems as well as the ways to improve upon them. Subsequently, it helps the US make an assessment of Taiwan's defense need. For instance, the US joined the study of integrated air defense with Taiwan's military in 1999, and in the next year, arms sale items such long range radar and AMRAAM air-to-air missile were agreed upon by the US.

It is also interesting to compare the different accomplishments of the "integrated air defense enhancement group" and the RMA ad hoc group. Recommendations made by the former group were almost implemented, while the latter group achieved little. One reason that can be argued is that the missile threat is physical in the mind of the defense planners and the general public, while RMA is an intangible concept, although one with wider ranging repercussions.

## Conclusion

To some extent, these indicate that Taiwan does not have the capacity to conduct defense assessment and planning. It also demonstrates that defense planners are only concerned with the physical threat while issues with long-range repercussions are put aside. Those problems have something to do with the lack of competent staff and expertise, but more importantly, traditional defense training emphasizing rigid discipline without encouraging innovation has severely limited the vision of defense planners.

Realizing this problem, Taiwan's defense planners have agreed to set up some new agencies to handle those issues through the "Organizational Law of the Ministry of

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<sup>40</sup> A typical instance is that the Division for Strategic and International Studies of the Taiwan Research Institute sponsored a conference on RMA and defense in April 1999.

<sup>41</sup> Personal interview with defense official, January 24, 2002.

<sup>42</sup> For the US-Taiwan security engagement, please see Arthur Ding, "US-Taiwan and US-China military relations after the 1996 Taiwan Strait crisis," in Yuh-woei Wang (ed), *Bush Administration's China Policy and the Development of the Cross-Strait Relations after the 2001 APEC Meeting* (Taipei: Prospect Foundation, December 2001), pp. 2-30.

National Defense”, which was ratified by the Parliament in January 2000. These new agencies are departments of defense planning, net assessment, and resource allocation, along with others. However, it will take time for these new agencies to function as expected.

All these characteristics point to a single fact. That being there is no innovation in Taiwan’s military, and under such conditions, it is difficult to imagine how Taiwan’s military can proceed to undertake RMA. The following are a list of the factors that forestall the implementation of RMA:

- Isolated diplomatic status
- Lack of sufficient military exchange with western countries to gain first-hand experience in transformation and innovation
- Occupation with daily operational routine by regular staff
- Inability to develop relevant technology
- Insufficient attention paid to indigenous development of expertise
- Overly rigid discipline

These factors have limited Taiwan’s military to the point that no strategy-led transformation can be expected. There will be no revolution in military affairs, merely evolution and military modernization.